



# Indo-US Technology Relations

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## **I. Introduction**

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India and the United States have had a long ongoing relation on matters of scientific and technical cooperation. This is not surprising given the high degree of association between Indian and US scientific and technical professionals at the academic level. The resulting interactions have led to a number of official bilateral country-to-country initiatives in joint research at academic institutions in both countries. The highly visible and successful Indo-US Joint Science and Technology Initiative (STI) was one such programme. At times there have been a few problems even in academic and research cooperation, especially when matters of Intellectual Property Rights (IPR) began to assume importance in the US agenda. Nevertheless, scientific cooperation at academic level has continued without any major differences between the two countries.

Matters have, however, been quite different when issues of technology transfer between the two countries were involved. This is true in both commercial and non-commercial areas, especially after the first Indian nuclear tests conducted in 1974.

The license procedures for issuance of export licenses to India were tightened at the time. The time gap between license applications and final decisions began to get extended, with considerable hardship to both US exporters and Indian importers. By the late 70s and early 80s, the process had begun to reach unacceptable levels of delays and denials, especially with respect to computers, at both low and high levels of performance. The long pending application of a supercomputer for weather prediction, ordered by the India Meteorological department (IMD), was only one of the prominent cases of delay and procrastination by US licensing authorities.

In order to break the impasse between the US and India on transfer of high technology dual-use goods and technologies from the former to the latter, the two governments initiated bilateral discussions in the early 80s. This resulted in the 1984 Indo-US Memorandum of Understanding (MOU) on technology transfer.

The MOU was negotiated by the two governments in view of the need to have an agreement recognizing “the importance of promoting commercial transactions between the two countries to the mutual benefit of both, without jeopardising the security interests of either.”<sup>1</sup>

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<sup>1</sup> Indo-US MOU on Technology Transfer, November 1984.

From the Indian perspective, the MOU's purpose of expediting "the processing of those cases requiring only the assurances contained in the MOU", while "limiting those cases which require separate case by case assurance", was meant "to facilitate trade in advanced technologies." The MOU clearly understood that "all the assurances will not be exercised on all items." From the US perspective, which was clearly concerned at the possible leakage of US supplied technologies to third countries, the MOU had clearly stated sections which detailed the Government of India's official commitment to protect US supplied technologies from such diversion, with joint verification, if the need for such a process steps were felt by both the parties. Further, the MOU stipulated comprehensive assurances relating "to the enhanced protection of particularly sensitive cases, where a validated license is required and where it is determined that the technology involved warrants such protection."

In addition the two governments negotiated assurances given by the Government of India in two Side Letters containing higher level of assurances in respect of technologies controlled for nuclear nonproliferation (NP) and missile technology (MT) reasons. The MT Side Letter given by the Government of India (GOI), for example, contains a GOI undertaking that a US commodity will not be used to make missiles etc of more than 300 km range and 500 kg payload capability. The MOU did not, however, prohibit indigenous development of ballistic missiles which do not have US components.

Furthermore, the MOU did not cover all items included in the Commodities Control List (CCL). It was limited to

- a) All items on the US CCL and all technical data controlled for national security reasons; and
- b) All items on the US Munitions List.

The US Government was to provide the Government of India with the current lists and all their future updates.

Although the implementation procedures of the MOU took sometime for completion of negotiations, becoming operational from April 1 1988, trade in high technology from US to India witnessed a jump from 1984 onwards. From less than \$ 100 million in 1983, it jumped to hundreds of millions of dollars in subsequent years. Table 1 shows trade in controlled goods between 1984 and 1988.<sup>2</sup>

**TABLE 1**

Trade in controlled goods and technologies from US to  
India (in \$ Million)

<b>Year</b>	<b>Total</b>	<b>Of which computers</b>
1984	522.3	145.4
1985	1334.6	764.4
1986	311.6	216.2
1987	563.1	348.3
1988	685.0	

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<sup>2</sup> BXA data for the corresponding years; see note 5.

In 1988, of the \$2.5 billion worth of total US exports to India, high technology items were reported to have accounted for \$ 870 million, over one-third of the total. (High technology includes items in aerospace, data processing, telecommunications, microelectronics, machine tools, scientific instruments etc.) Of this over three-fourths, i.e. \$ 685 million, were controlled goods and technologies exported under US individual validated licenses, i.e. under a license requiring prior written government approval for each export.

Indeed, recognizing India's increasing potential as a high-technology partner, the US Department of Commerce established a new Export Administration Attache's position at the American Embassy in India. Of the four such attaché positions worldwide at that time, the position in India was the first and only one outside Europe.<sup>3</sup>

After the MOU implementation became operational in 1988, the Indian Government began issuing Import Certificates (IC) for the import from US of items that were covered by the MOU. However, the implementation of the MOU began to run into roadblocks after President Bush announced the Enhanced Proliferation Control Initiative (EPCI) in December 1990.

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<sup>3</sup> Steward Ballard, "Current Trends in US Licensing of Hi-Tech Exports: Impact on India", *ELSOFTX Newsletter*, June 1991. pp. 10



The justification for the Initiative was that the US government became aware that Iraq, on the eve of the Persian Gulf War, had enhanced its weapons of mass destruction capability by obtaining imported goods that were exempt from licensing requirements. EPCI led to the imposition of chemical, biological, and missile end use and end user-based controls that were similar to the nuclear end use and end user-based controls already in effect. The EAR<sup>4</sup> requires that exporters obtain a license for export of an item, even if one is not so normally required, if the exporter knows or is informed by BXA<sup>5</sup> that the export will be used in nuclear, chemical, or biological weapons or missiles or facilities engaged in such activities. US persons are also restricted from activities in support of nuclear, chemical, or biological weapons or missile-related projects. Although the US Government stated that these regulations were designed to prevent exports that could make a material contribution to proliferation projects of concern and were not intended to affect legitimate commercial trade, in practice this had a major impact on Indo-US bilateral trade in high technology products.

EPCI began as a US unilateral control, but with US leadership, a large majority of its nonproliferation regime partners have also incorporated so-called “catch-all” export controls. At

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<sup>4</sup> EAR, Export Administration Regulation: See Annexure I.1

<sup>5</sup> BXA: Bureau of Export Administration: See Annexure I.1

present, virtually all of the NSG<sup>6</sup> and MTCR<sup>7</sup> member countries have some form of catch-all controls.

In addition, notwithstanding the provisions of the MOU which stipulated that the two Governments were to have regular consultations “to enable the Government of India to convey its views”, a number of changes were made by the US Government which effectively reduced the role and importance of the MOU in Indo-US high technology transactions. When the MOU was negotiated in 1984, the US CCL had 220 entries of which 154 were controlled for national security reasons (either alone or in conjunction with other reasons, bringing 70.0 percent of the entries in the CCL under the purview of the MOU. Through various modifications and additions in the CCL, the number of entries had by 1993 increased to 416 while the number of entries controlled for national security reasons was only 162 accounting for less than 40 percent of CCL entries.

Further rapid advances in computer technology had progressively resulted in accelerated relaxation of controls on computers. For example, in 1984 computers with a performance capability of 6 MTOPS (million theoretical operation) were considered to be super computers. Technological advances

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<sup>6</sup> NSG: Nuclear Suppliers Group: See Chapter II

<sup>7</sup> MTCR: Missile technology Control Regime, See Chapter II

since then have resulted in a rapid relaxation of controls on computers, and the limits for unlicensed exports to civilian end-users and end-uses have been raised in rapid stages. The last revision, effective January 19, 2001, raised the limit to 85,000 MTOPS!

For all these reasons the 90s saw a gradual erosion in the importance of the MOU which was reflected in the steady drop in the value of ICs issued by the Government of India as well as of licenses approved for India. Table 2 gives the figures for the value of export licenses issued by the USG, the share of computers in that value and the value of ICs issued by the Government of India.

In recent years much of the ICs issued by the Government of India have been to the Ministry of Defence for munitions items. The value of export licenses for munitions items are not included in the value of export licenses in Table 2, which only gives the value of licenses issued by the Department of Commerce. The IC values, however, are in respect of MOU items i.e. NS controlled items in the USCCL and munitions items in the USML.

One further clarification is necessary in respect of the data in Table 2. The values of export licenses since 1997 need to be read carefully. During 1997 and 1998, the major elements consisted of three items:

- i) EAR99 items, i.e. items, that are not listed separately in the US CCL and which normally do not require licenses. These amounted to \$ 28.1 M in 1997; \$26.1 M in 1998 and \$482.5 M in 1999.<sup>8</sup> This increase in 1999 was because many entities in India that imported these items were listed as requiring individual licenses as a result of the Enhanced Proliferation Control Initiative (EPCI). In addition, because of the May 98 sanctions imposed by the US following the Indian nuclear tests, the number of Indian entities in the entity list was enlarged to more than 200. As a result the value of EAR licenses was nearly \$ 500 million in 1999;
- ii) Items controlled for chemical weapons reasons. Many common chemicals are classified as precursors or intermediate chemicals for chemical weapons and hence need licenses. The MOU does not cover items controlled for chemical weapon reasons; and
- iii) Software for information security, primarily encryption items. These accounted for \$ 60.4 M in 1997 and \$ 62.9 M in 1998. Their value has fallen since then.

**TABLE 2**

Value of US export licenses (including computer licenses) and of ICs issued by the Government of India. (\$ Million)

Year	Value of US export licenses for India		ICs issued
	Total	Of which computers account for	
1984	522.3	145.4	
1985	1334.4	764.4	
1986	371.6	216.2	
1987	563.1	348.3	
1988	685		363.2
1989	218		285.3
1990	221	131.0	134.1
1991	166.4	70.8	100.2
1992	70.1	24.8	100.1
1993	63.0	24.6	56.5
1994	66.1	3.42	23.3
1995	30.7	2.67	32.4
1996	43.1	1.54	26.9
1997	150.4	0.13	37.4
1998	149.4	1.65	39.2
1999	757.0		
2000	164.0		

Apart from the problems associated with the working of the 1984 MOU, the USG had also seemed to have taken a policy decision to freeze technology transfers to India. In May 1992, the USG imposed missile proliferation sanctions on the Indian Space Research Organisation (ISRO) pursuant to Sec. 73 of the Arms Export Control Act. These sanctions included the prohibition of any license for exports to ISRO. This was notwithstanding the Side Letter containing higher level

assurances about the nonuse of US supplied components in any of the Indian missile programmes.

In a similar manner, the US refused to export even minor components for the safe running of the Tarapur Atomic Power Station (TAPS) even though such exports were permitted by the US Atomic Energy Act.

Thus by the mid 90s, Indo-US relations on matters of high technology dual-use goods and technologies had almost ceased to exist and continued to be an irritant in the advancement of bilateral relations.

## **II. May 1998 Sanctions**

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When India conducted its second round of nuclear tests in May 1998, it automatically resulted in the application of US sanctions on India on account of Sec. 102 of the Arms Export Control Act (AECA).<sup>9</sup> The sanctions were broad in scope (Sec. 102 (b)(2)(A)-(G)).<sup>10</sup> For our analysis the relevant ones were the following:

1 Sec. 102 (b)(2)(B): The United States Government shall terminate

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<sup>8</sup> BXA Foreign Policy Report 1999.

<sup>9</sup> Presidential determination 98-22 of May 13, 1998. Federal Register: fr20my98-123. Annexure II.1

- (i) sales to that country under this Act of any defense articles, defense services, or design and construction services, and
- (ii) licenses for the export to that country of any item on the United States Munitions List.

2. Sec, 102 (b)(2)(G): The authorities of section 6 of the Export Administration Act of 1979 shall be used to prohibit exports to that country of specific goods and technology (excluding food and other agricultural commodities), except that such prohibition shall not apply to any transaction subject to the reporting requirements of title V of the National Security Act of 1947 (relating to congressional oversight of intelligence activities)

For the purposes of this Act the term “goods and technologies” means

A) nuclear materials and equipment and sensitive nuclear technology (as such terms are defined in section 4 of the Nuclear Non-Proliferation Act of 1978), all export items designated by the President pursuant to section 309(c) of the Nuclear Non-Proliferation Act of 1978, and all technical assistance under section 57 b. of the Atomic Energy Act of 1954, and

B) in the case of exports from a country other than the United States, any goods or technology that, if exported from the United States, would be goods and technology described in subparagraph (A).

On June 18, 1998, the Department of Commerce announced certain sanctions on India and Pakistan, as well as supplementary measures to enhance the sanctions in line with the Presidential directive. Subsequently on November 19, 1998, the Department of Commerce amended the Export Administration Regulations (EAR) to codify the June announcement.<sup>11</sup> It also added Sec. 742.16 to the EAR codifying a license review policy, implemented in practice in May, of denial for the export and reexport of items controlled for nuclear proliferation (NP) and missile technology (MT) reasons to *all* end-users in India.

To supplement the sanctions of Sec. 742.16, the Department of Commerce added a large number of Indian government, parastatal and private entities determined to be involved in nuclear, missile or conventional military activities to the Entity List in Supplement No. 4 to part 744 of the EAR. Exports and reexports of all items subject to the EAR to listed government, parastatal and private entities were required to obtain a license. Exports and reexports of all items subject to the EAR having a classification other than EAR99 were required to obtain a license to listed military entities. The United States reviewed license applications for the export or reexport of the restricted items to the listed entities with a presumption of denial.

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<sup>10</sup> Arms Export Control Act (P.L. 90-629) Annexure II.2



The Entity List prepared by the Department of Commerce (DOC) was beyond anything contemplated in the AECA which had required a prohibition on exports of only “specific goods and technologies”, not an outright prohibition of all items including those which formerly did not require licenses because of the low-technology nature of the item. EAR99 items are those which are of such a common nature that they do not merit a separate entry in the US CCL. More than 200 entities were listed, many of them working in areas with no connection to either nuclear or missile technologies (e.g. the Defence Institute of Psychological Research (DIPR), Defence Institute of Physiology and Allied Sciences (DIPAS) etc). It was apparent that an indiscriminate listing of entities had been made with little or no thought given to the areas of research of the entities.

In addition, in a tightening of the sanctions, the State Department began to create impediments in the way of student visas to Indians, which was considered sufficiently serious to warrant the NAFSA – National Association of Foreign Student Advisors – in USA to request a meeting with State Department officials. Other Departments of the USG also began to obstruct even purely academic cooperation between Indian and US scientists. The Department of Energy denied requests by scientists at US national laboratories to visit India for international conferences totally unrelated to nuclear and related subjects.

While the US Congress did pass an act to give authority to the President to waive some of the sanctions, the India-Pakistan Relief Act, proposed by Sen. Brownback, explicitly excluded Sec. 102 (b)(2)(B) and (G) from the waiver authority.<sup>12</sup> Thus the sanctions relating to technology transfer continued, which had far reaching effects on US licensing of goods and technologies to India. In the US fiscal year (FY) 1998 – Oct. 1 1997 to Sept. 30 1998, the DOC received 1008 applications for exports to India. Of these 427 were for items classified as EAR99 – otherwise not requiring a license but submitted due to the new requirements. In FY 1999, the US approved 651 licenses for exports to India and denied 995 license applications. Many of the license applications – 43 percent of the approved ones and 79 percent of the denied ones – were for EAR99 products. Denial of licenses for exports to India constituted the bulk of US global denials.<sup>13</sup> In 1999, for example, while India accounted for only 2228 of the 12876 applications processed by DOC, denials of licenses for export to India formed the bulk of total US denials – 1011 out of a total 1169. India had the lowest rate of approvals amongst the group of countries targeted by the US: China, Cuba, North Korea, Pakistan, Russia, Syria etc.

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<sup>11</sup> India-Pakistan Sanctions and other measures. Federal Register: fr19no98-18.

<sup>12</sup> India-Pakistan Relief Act, 1998. Section 101(a) Title IX of Public Law 105-277. Repealed Oct. 25, 1999.

<sup>13</sup> BXA Foreign Policy Report 1999.

Considering the pre-sanction volume of licensed trade between India and the US, the loss felt by India as a result of the sanctions of Sec. 102 (b)(2)(G) was not very severe.

However, the sanctions as a result of Sec. 102(b)(2)(B), i.e. denial of licenses for items on the USML, did have some impact. In particular some of the more important and immediate cases of impact on this account were the following:

- 1) The non-return of the Flight Control System for the Light Combat Aircraft (LCA) which was sent to USA for evaluation and which has been impounded by the US Government under Section 102(b)(2)(B)(i).
- 2) The denial of licenses for export of engines for the ALH, (Advanced Light Helicopters), thereby delaying the production of this helicopter;
- 3) Denial of export licenses to both US and certain European firms for export of weapon locating radars to the Indian army – an item urgently needed by them for a long period but especially so during the Kargil operations; and
- 4) Grounding of the navy's fleet of Seaking helicopters as a result of the suspension of product support by the British firm under orders from the US State Department.

In each of these cases, there was some significant impact on one or more of India's programmes of national security concern.

It was not, however, that the effects of the sanctions were felt only in India. The US International Trade Commission published a study on the impact of sanctions in September 1999.<sup>14</sup> Its summary findings were:

- 1) Effect on US Industry. According to statements received by the Commission amongst importers there was an increasing perception of US companies as unreliable suppliers. Also the companies most affected by the sanctions were those involved in the sale of industrial machinery, transportation, and electronic products.
- 2) Impact on India. Based on the analysis of economic and trade data, the commission concluded that the sanctions had a relatively minimal overall impact on India's economy. Incidentally this was in line with some of the analysis of the sanctions that had been done in India – both prior to, and after, the tests and the imposition of sanctions.<sup>15</sup>

The duration of the India-Pakistan Relief Act was only for one year and the sanctions waiver expired in October 1999.

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<sup>14</sup> Overview and Analysis of the Economic Impact of US Sanctions with Respect to India and Pakistan, Investigation No. 332-406, US International Trade Commission, September 1999.

<sup>15</sup> "The inescapable conclusion, therefore, is that India need not worry about any negative fallout on its economy due to the US and its allies' reactions and counter-measures in case it decides to renew its nuclear testing." G.Balachandran, An Evaluation of the effects of US sanctions against India, May 1996. And "The foregoing discussion suggests that the sanctions imposed by the US and others, though nationally irksome, are unlikely to have any serious effect on our economic development.", G.Balachandran and T.C.A. Srinivasa Raghavan, Sanctions: Indo-US Perspectives, Asian Institute of Transport Development, New Delhi, June 1998

The US Congress in the meantime passed in October 1999 a new sanctions waiver, as part of the Defense Appropriations Act, 2000. This differed from the earlier sanctions waiver in three major respects. First it was not a time bound one; secondly, it did not exclude Sec. 102(b)(2)(B) and (G) from the waiver authority. However, it did stipulate that these could be waived only if the President certified that the application of sanctions would not be in the national security interests of the United States; and finally the Congress expressed the sentiment that the broad application of export controls to the very large number of entities is inconsistent with the specific national security interests of the United States and that this control list required refinement.<sup>16</sup>

President Clinton waived part of the sanctions, under this authority, on Oct. 27 1999, but chose not to remove technology related sanctions.<sup>17</sup> The Department of Commerce did, however, remove some 51 Indian entities from the list of over 200 organisations that had been named in November 1998.<sup>18</sup> In addition it relaxed slightly the conditions for issuance of licenses for EAR99 items. Later on in June 2000, it removed

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<sup>16</sup> Title IX, Department of Defense Appropriations Act 2000 (P.L.106-79), Annexure II.3

<sup>17</sup> Presidential determination 2000-4 of Oct.27, 1999. Federal Register: fr08no99-143.

<sup>18</sup> BXA EAR Entity List: Removal of Entities etc. Federal Register: fr17mr00-6.

<sup>19</sup> BXA EAR Entity List: revisions to the Entity List. Federal Register: fr26jy00-10.

two more entities from the Entity List while at the same time it added one more entity.<sup>19</sup>

These changes had some minor impact. The denial rate of licenses for India fell from 63.7 percent in 1999 to 34 percent in 2000. This was, however, primarily due to the relaxation of rules governing licenses for EAR99 items which in the normal course of circumstances would not have in any case required licenses. The two components of sanctions with respect to technology transfer, Sec. 102(b)(2)(B) and (G), continued to remain in place. President Clinton did, however, exercise in a very limited way his authority to waive sanctions under Sec. 102(b)(2)(B) by allowing the transfer of only certain specified US-origin helicopter parts from UK to India, i.e. in respect of the Seaking helicopters.<sup>20</sup>

It was only on September 22, 2001 that President Bush finally exercised his waiver authority and removed all remaining sanctions on India including Sec. 102(b)(2)(B) and (G).<sup>21</sup> The Department of Commerce followed this action by drastically reducing the number of Indian Entities still left in the Entity List.<sup>22</sup>

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<sup>20</sup>Presidential Determination 2001-11 of Jan 19 2001. Federal Register: fr01fe01-87.

<sup>21</sup>Presidential Determination 2001-28 of September 22, 2001. Federal Register fr02oc01-109

<sup>22</sup>BXA India-Pakistan: Lifting of sanctions, Removal of Indian Entities and Revision in License Review policy. Federal Register: fr01oc01-

What was the effect of the sanctions in respect of technology relations? As discussed earlier, by the time the May 1998 sanctions were imposed such relations had already sunk to low levels. Therefore, in practical terms they did not add anything more to India's problems except for three things:

- 1) It made it difficult and cumbersome to procure ordinary goods and technologies which would not have in the normal course of events required any license. It increased paperwork.
- 2) It made it necessary for Indian importers to second-source some of their requirements from countries other than the US.
- 3) As already discussed there was some impact in respect of items on the USML.

What effect will the removal of sanctions have on Indo-US technology relations? It is too early to say. After all, removal of sanctions only takes the relation to pre-May 1998 status. And as has been already discussed, that state was anyway pretty low. Therefore, removal of sanctions *per se* would not improve the environment. Removal of sanctions, though a necessary condition for improvement; is not a sufficient one unless it is followed by far more concrete steps. These are discussed separately below.

### **III. Technology Export Control Regimes**

The United States is not alone in controlling export of high technology dual-use goods and technology. There exist a number of supplier-controlled regimes – a sort of cartel so to speak – that coordinate the exports of such items through informal multilateral groupings. Of these the following are the four prominent ones:

- 1) Nuclear Suppliers Group (NSG)
- 2) Missile Technology Control Regime (MTCR)
- 3) The Australia Group
- 4) The Wassenaar Group.

#### **1. Nuclear Suppliers Group**

The Nuclear Suppliers Group (NSG) and the NPT Exporters Committee (Zangger Committee) are two arrangements that administer multilateral nuclear export controls. The Zangger Committee was formed soon after the NPT came into force in order to interpret Art. III.2 of the NPT and consisted of NPT signatories. It came into being in 1970.

The Nuclear Suppliers Group had its origin at a meeting, as a result of the Indian nuclear tests in 1974, of seven supplier countries – Canada, France, UK, FRG, Japan, USA and USSR – in order to look afresh into nuclear exports.<sup>23</sup> After a series

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<sup>23</sup> The Nuclear Suppliers Group: Its origins, Role and Activities. IAEA INFCIRC/539, Sept. 97.



of meetings in London in 1975, as a result of which the group was initially referred to as the London Group, these countries reached an agreement, published by the IAEA in 1978, on a set of guidelines for nuclear transfer. These guidelines are commonly referred to as the NSG Guidelines.<sup>24</sup>

The NSG Guidelines were similar to the Zangger committee guidelines, in that they required IAEA safeguards only on items supplied. Fullscope safeguards were favoured by some of the participants, but others would not support the proposal so nothing was achieved. Once the Guidelines were published the adherents to the Guidelines did not meet for the next 13 years. One reason for this could be the fact that the NSG had originally been convened as a reaction to the Indian tests of 1974, and having met and formed a new group they did not feel any compulsion to meet thereafter because the Indian nuclear explosions programme also did not develop any further.

However, the Gulf War changed all that. Once again the Group was confronted with a state that had an ongoing nuclear weapon programme, which although in its initial stages, had been developed with the import of dual-use items. The Group began to meet in a formal way, with a meeting in Hague in 1991 followed by another in Warsaw in 1992. The Hague meeting resulted in certain major initiatives towards the restructuring

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<sup>24</sup>NSG Guidelines for Nuclear Transfers, IAEA INFCIRC/254 February 1978.

of the NSG working. First, it resulted in the establishment of a Working Group to examine the feasibility of a dual-use export control arrangement. Second, parallel with the establishment of the Dual-use Group, efforts were made to tighten the export of nuclear items. Also, while those attending the early meetings were still referred to as 'adherents' and not 'members', by 1993 the concept of membership got recognized. Today "adherent" is the status of a country that has informed the Director General of IAEA of its intention to abide by the Guidelines, and asks that he inform the Agency members of this decision. Membership is a status that can only be attained by a consensus of the existing members of the group.

By 1993 a number of changes had taken place in the working of the NSG. The group formally incorporated full scope IAEA safeguards on "all source and special fissionable materials in its (i.e. the recipient country's) current and future peaceful activities".<sup>25</sup> However, the new Guidelines relaxed these requirements partially by making them not applicable to "agreements or contracts drawn on or prior to April 3, 1992."<sup>26</sup> In addition the new Guidelines allowed for transfers without a fullscope safeguards agreement "only in exceptional cases when they are deemed essential for the safe operation of existing facilities and if safeguards are applied to those

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<sup>25</sup> NSG Guidelines for Nuclear Transfers, IAEA INFCIRC/254/Rev.1/Part 1/Mod.1, July 1993

<sup>26</sup> Sec. 4 (c) INFCIRC/254/Rev.1/Part 1/Mod. 1, July 1993.

facilities.”<sup>27</sup> According to knowledgeable sources, a common understanding on what constitutes “exceptional cases” was agreed upon at the 1994 Plenary in Madrid according to which “exceptional cases are generally understood as those when a transfer of a trigger list item is deemed to be essential in order to prevent or correct a radiological hazard posing a significant danger to public health and safety and which cannot be realistically met by other means.”<sup>28</sup>

In addition the group formally announced their guidelines for the transfer of dual-use items;<sup>29</sup> the NSG arrangement covering their export is markedly different from that of the Zangger Committee. As dual-use items cannot be defined as EDP (Especially Designed or Prepared) equipment, they fall outside the Zangger Committee’s mandate. Further, the Zangger requirements do not include full-scope safeguards on all source and special fissile material in the recipient country. Notwithstanding these differences, there is close cooperation between the NSG and the Zangger Committee. There is substantial overlap between the memberships of the two groups. China is a member of the Zangger Committee and not of the NSG. On the other hand Belarus, Brazil, Cyprus, Latvia and New Zealand are members of the NSG but not of the Zangger Committee.

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<sup>27</sup> Sec. 4 (c) INFCIRC/254/Rev.1/Part 1/Mod. 1, July 1993.

<sup>28</sup> Carlton E. Thorne, *A Guide to Nuclear Export Controls*, 2001. pp. 78

<sup>29</sup> NSG Guidelines for Transfers of Nuclear-Related Dual-use equipment material and related technology, IAEA INFCIRC/254/Rev.1/Part2, July 1992

Membership of the NSG has grown over the years, and currently the NSG has 39 members. There is no formal membership procedure for NSG. New members are admitted by a consensus of the group as a whole. Membership is attained through a two-step process: a country becomes a Subscribing Government to the Dual-Use Arrangement by a consensus decision to invite a country into the Dual-Use Arrangement and by an exchange of diplomatic notes with other Subscribing Governments and becomes a participant in the NSG Plenary by a consensus decision by all current NSG members. Countries that are not members can attend the NSG meetings as observers.

The NSG has had some impact on the Indian nuclear program for civil end-uses. Certain NSG members initially questioned the contract between the former USSR and India for the supply of reactors for the Koodankulam Nuclear Power Project as being contrary to the NSG Guidelines, since India does not have any full-scope safeguards agreement with IAEA. Russia, the successor state to the USSR, defended the agreement as it predated April 3, 1992 – the cutoff date in the NSG Guidelines. However, there may be problems in extending the project beyond the two reactors originally contracted for in the agreement.

On the other hand, France expressed its inability to continue supplying fuel to Tarapur once the new Guidelines came into force even though the agreement for fuel supply predated April

3, 1992. Recently when Russia agreed to supply fuel to Tarapur, the US objected to the sale in the NSG meetings as being contrary to the exceptions allowed under Sec. 4(b) of the NSG Guidelines.

Currently, because of NSG Guidelines, India will find it difficult to find partners or collaborators for its nuclear power programmes, both in terms of technology and finance.

## **2. Missile Technology Control Regime (MTCR)**

The Missile Technology Control Regime (MTCR), similar to the NSG, was established in 1987 as an informal association of countries, which seek to coordinate their national export licensing efforts, aimed at preventing proliferation of missiles and missile technologies. Like the NSG, the MTCR too is based on adherence by its members to common export policy guidelines, the MTCR Guidelines. Again, like the NSG, the MTCR also has a common list of controlled items, listed in two groups or categories. Category I items, which require greatest restraints, include complete rocket systems and unmanned air vehicle systems. There is a strong presumption of denials of such items. Category II items invite lesser restrictions. Nevertheless, recipients are expected to give strong end-user certificates attesting to non-diversion of items to development of delivery systems for WMD (Weapons of Mass Destruction).

The MTCR too revised their guidelines after some time, like the NSG. Originally the items controlled were for delivery systems capable of delivering a payload larger than 500 kg for a range of over 300 km. A later revision included all delivery systems of range greater than 300 km with no minimum payload weight – to take care of biological and chemical weapon payloads.

The most striking difference between the NSG (and the Zangger Committee) and the MTCR is the fact that the former have behind them at least some form of an international treaty, that on the Non-Proliferation of Nuclear Weapons (the NPT) as the basis for the grouping, whereas the MTCR has no such international legal basis. There is no international treaty banning the development and possession of missiles. It is, therefore, left to each country to interpret the conditions of transfer in the light of their own domestic legislation and practices.

Although the MTCR does not have an observer category, countries can become adherents to the MTCR by observing the MTCR Guidelines on transfer of missiles and related technology. However, unlike the NSG, there is no formal approach as such to becoming an adherent. Members are free to choose their own definition of an adherent. The US, for instance, defines an “MTCR adherent” as “a country that participates in the MTCR or that, pursuant to an international

understanding to which the United States is a party, controls MTCR equipment or technology in accordance with the criteria and standards set forth in the MTCR.”<sup>30</sup> There are currently 33 members in the MTCR.

MTCR Guidelines have had an impact on the Indian space programme. In May 1992, the United States imposed missile proliferation sanctions on the Indian Space Research Organisation (ISRO), pursuant to the Sec.73 (a) of the Arms Export Control Act.<sup>31</sup> These sanctions prohibited granting any license for exports to ISRO or entering into contracts with it. The sanctions applied to ISRO and all of its subdivisions and subunits. These sanctions were imposed in response to the Indo-Russian agreement for the transfer of cryogenic engines and their technology from Russia to India. Russia was also sanctioned – in their case the space agency Glavkosmos – for the transfer. As a result of the sanctions the Russians withdrew from the contract for technology transfer, but instead chose to augment the number of cryogenic engines that were to be supplied. In addition individual programmes of the ISRO, such as the PSLV and GSLV continue to be under extended scrutiny under the EPCI of the US export controls. It is true that unlike the NSG Guidelines there is far less cooperation between MTCR members in sharing common denial lists, but

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<sup>30</sup>Sec. 74 (a) (3), Arms Export Control Act. (P.L. 90-629)

<sup>31</sup>Determination Regarding Missile Technology Proliferation Activities of Foreign Persons, Federal Register, May 18, 1992, Vol.57 No. 96.

nevertheless MTCR has had and continues to have some negative impact on the Indian space programme.

### **3. The Australia Group (AG)**

The Australia Group (AG) is another informal group of countries concerned with control of technologies relevant for the production of WMD (Weapons of Mass Destruction) – in this case chemical and biological weapons. The group came into existence in the 1980s during the Iran-Iraq war, when a special investigatory mission sent by the UN Secretary General to Iran found that chemical weapons had been used in that war.<sup>32</sup> A number of countries imposed licensing measures on the export of a number of chemicals used in the manufacture of chemical weapons. The measures imposed by the governments concerned, however, were not uniform in either scope or application. It also became apparent that attempts were being made to circumvent the measures.

This led Australia to propose, in April 1985, that the countries which had introduced licensing for exports might meet in order to examine the scope for harmonising the measures taken individually and for enhancing cooperation amongst them on this issue. Accordingly the first meeting of what subsequently

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<sup>32</sup> This section draws heavily from the website maintained by the Australia Group, [www.australiagroup.net](http://www.australiagroup.net)



became known as the Australia Group took place in Brussels in June 1985. Like the NSG and the MTCR, the AG too is an informal arrangement. Participants do not undertake any legally binding obligations. Measures agreed to at meetings of the Group are applied on a national basis, although all participants agree that they will be more effective if similar measures are introduced by all potential exporters of relevant chemicals, biological agents and equipment and by countries that may be involved in transshipment of such goods as well.

The group holds regular meetings at which issues concerning the operation of export controls is reviewed. In addition the meetings also review the list of chemical weapon precursors, human, animal and plant agents whose exports need to be controlled as also the dual-use facilities and equipment that can be used to produce these items.

With the conclusion of the Chemical Weapons Convention (CWC) and the setting up of the Organisation for the Prohibition of Chemical Weapons (OPCW) in The Hague, the work of the AG has become redundant to some extent, especially with respect to the states party to the CWC. However the AG still operates a cartel, with much to be desired by way of transparency of its operations. Although it was affirmed in 1992 that the AG countries would “undertake to review, in the light of the implementation of the Convention, i.e. the CWC, the measures that they (i.e. the AG) take to prevent the spread

of chemical substances and equipment for purposes contrary to the objectives of the Convention, with the aim of removing such measures for the benefit of State parties to the Convention acting in full compliance with their obligations under the Convention,” in practice they have a long way to go. The AG still operates as a restrictive cartel – a denial regime so to speak – rather than as a group concerned with controlling proliferation. The list of items controlled by the AG is larger than that defined by the CWC.

However, the impact on India of the AG and its common export licensing policies is very little or nil. The US CCL, for example, controls the export of precursors/intermediate chemicals for chemical warfare as also human pathogens and toxins. Indeed export licenses for such items form the biggest component of US export licenses for India. During much of the 90s they formed the single largest element, in value terms, of export licenses for India: \$ 19 million out of a total of \$43 million in 1996; \$ 33 million/\$ 150 million in 1997 and \$30 million/\$ 149 million in 1998. At the same time there have been virtually no denials of export licenses for such items during this period. Between 1991-95, for example, there was only one rejection of an export license for such an item worth \$65. In the year 2000, the latest year for such data is available, no applications for export of such items were denied.

#### **4. The Wassenaar Arrangement (WA)<sup>33</sup>**

Formally the Wassenaar Arrangement (WA) is the latest export control regime. Its roots however go back to the former COCOM regime, which was considered to be anomalous after the end of the Cold War. The then COCOM members felt the need to establish a new arrangement to deal with the spread of conventional weapons and dual-use goods and technologies. Accordingly, the then 17 members of COCOM met in The Hague in November 1993 to terminate COCOM and establish a new multilateral arrangement. This decision was confirmed at a high level meeting in Wassenaar, Netherlands in March 1994. COCOM ceased to exist on March 31, 1994 although participating States agreed to continue the use of the COCOM control lists as a basis for global export controls on a national level until the new arrangement could be established. Working Groups were formed to flesh out the details of such a new arrangement. Also a number of other countries, not members of COCOM, were included in the negotiations. Finally an agreement to establish the “Wassenaar Arrangement” was reached in December 1995 at Wassenaar. In the meantime, the Russian Federation, Czech Republic, Hungary, Poland and the Slovak Republic – all former targets of COCOM – were welcomed as participating states. After further negotiations – and the inclusion of new members – a consensus on the

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<sup>33</sup> Much of the following discussion on Wassenaar draws heavily from the website maintained by the Arrangement: [www.wassenaar.org](http://www.wassenaar.org).

arrangement was reached in July 1996 and the first Plenary Meeting of the 33 founding members took place where the Wassenaar Secretariat was located in December 1996.

Although the WA is formally open on a global and non-discriminatory basis to prospective adherents that comply with the agreed criteria, its current membership still remains at 33, the original number of founding members in 1996. Admission of new members requires the consensus of all members. The Arrangement does not have an observer category.

The WA maintains two lists: a Munitions List and a Dual-Use List. These lists are reviewed periodically to take into account technological advances or other changes in circumstances. The Dual-Use List, also called the Basic List (Tier 1), has two nested annexes of Sensitive (Tier 2) and Very Sensitive items (Tier 2 sub-set). For items on the Sensitive List, information exchange requirements are more extensive (see below). For items on the Very Sensitive List (e.g., stealth technology materials, high-powered computers, equipment related to submarine detection, advanced radar, advanced jet engine technology), participating states are to exercise “extreme vigilance” with respect to exports.

Although member states enforce the WA export controls through their national policies to ensure that transfers of arms, dual-use goods and technologies do not contribute to the

development or enhancement of military capabilities that undermine the goals of the Wassenaar Arrangement and are not diverted to support such capabilities, the decision to transfer or deny any items is the sole responsibility of each participating state. The WA's stated policy is not to impede *bona fide* civil transactions and is directed at exports to non-members only.

Nevertheless WA does have certain information exchange requirements amongst participating states. The Arrangement's specific information exchange requirements involve semi-annual notifications of arms transfers, currently covering seven categories derived from the UN Register of Conventional Arms (including model and type information), Sensitive List dual-use transfers and denials of Basic List dual-use transfers. Members are also required to report within 30-60 days any denials of Sensitive List items. Any member that undercuts such denials (i.e., export the denied item to the same end-user) within three years of the denial must report the issuance of the export license within 30-60 days.

There is no evidence to suggest that the WA has had any effect on India's trade in high technology dual-use and munitions items, apart from the problems associated with the application of national laws and policies by individual countries.

### **Summing up**

Except for NSG and MTCR, which have had a direct impact on some of India's technological programmes, the other two have not had any direct or material impact. All these four regimes share a number of characteristics: (i) they are informal with a closed membership; (ii) they have a high degree of commonality in membership<sup>34</sup>; (iii) while all of them profess that their aim is not to disrupt trade or act against peaceful programmes of other nations, in practice they are aimed at precisely such programmes; and finally, (iv) they lack any transparency in their operations. While all these are objectionable features that are not conducive to any meaningful international efforts, it is also true that they are more or less here to stay. The aim of India should be to reorient these groups, if and when India decides to join them and they agree to Indian membership. At this point of time neither party has seriously considered such a move.

### **IV. Future Indo-US Technology Relations**

In the final years of Clinton's second term, relations between the US and India began to thaw, culminating in the successful visit of President Clinton to India. A number of agreements were signed with provisions for regular annual consultation

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<sup>34</sup>Annexure III.1

between the two heads of state, the setting up of a number of bilateral commissions etc. As already mentioned, in the last days of his presidency President Clinton exercised – albeit in a limited manner – the sanction waiver on issue of licenses for Munitions List items when he cleared the return of the SeaKing helicopter parts that had been impounded in UK.

The new administration under President Bush has been continuing with the process started by the previous administration. In fact, it had expressed its desire to accelerate the process of reorientation. Even though the events of September 11, 2001 have drawn immediate attention of the US administration – as indeed the whole world – it is also necessary to look beyond the immediate need to respond to the fight against terrorism and examine the options to advance US-India common interests and programmes.

While Indo-US relations encompass a whole range of issues – economic, political and technological – we shall concentrate here on the science and technology aspects of the bilateral relation. It is worthwhile mentioning here that the recent move by the Bush administration to remove all remaining 1998 sanctions is a step in the right direction, and will go some way towards the freeing of restraints that were in place in bilateral high-technology trade. In US FY 2001 (Oct. 1, 2000-Sept.30, 2001), while the BXA processed around 11000 applications globally – of which Indian applications accounted for about

1000, denials of export licenses to India numbered 244 out of a global denial – inclusive of India – of 398. With the announced changes in BXA regulations, this rate of denial of export licenses for India is expected to come down.

So where do we go from here? Some of the steps that can be taken are given below. It must be stressed that many of these issues have long been on the bilateral agenda and are not issues that can be solved without much preparation and hard work on both sides. They are however amenable to solutions that address the concerns of both the countries without compromising the interests of either.

#### **4.1 The 1984 Indo-US MOU**

The 1984 Indo-US MOU has been discussed in Section I. As already mentioned, the coverage of the MOU has been drastically reduced over time, but it did address in a positive and comprehensive manner the interests and concerns of both the countries. It was meant to encourage technology transfer by recognizing the centrality of trade in technology transfers. It addressed Indian concerns about delays in the processing of Indian applications by having a single point issue of Import Certificates (IC) by the Government of India. It made such transfers routine and automatic in the majority of cases – items that were controlled for national security reasons in the CCL and items listed in the Munitions List. It took care of US concerns about diversion to both third parties and to domestic



programmes of concern. It allowed for joint investigations by both the governments in cases where there was concern about diversion to third parties. It took care of US concerns about transfer of sensitive technologies by allowing for additional assurances by the Government of India. It took care of US apprehensions about diversion of US technologies to nuclear and missile development programmes with side letters from India assuring no such diversion. The effects were felt almost immediately after the MOU was concluded.

There is a need to revive the original spirit of the 1984 MOU, but modifications are necessary. These include:

- i) Expansion of the scope of the MOU to include all items on the CCL of the ERA. This would include, therefore, not only NS items but also items controlled for nuclear proliferation (NP) and missile technology (MT) reasons. This would not be out of place especially after India has already given side letters for assuring the US about the nondiversion of such items for projects of concern.
- ii) To take care of sensitive technologies, India and the US can negotiate an “India Green Line” analogous to the “China Green Line”. In case of the “China Green Line”, the general licensing policy was to approve applications, except for those items that would make a direct and significant contribution to electronic and anti-submarine

warfare, intelligence gathering, power projection and air superiority. Such applications were to receive extended review or denial. In addition it provided that items might be approved even though they may contribute to Chinese military development, or the end-user or end-use may be military. The proposed “India Green Line” could be along similar lines although the list will have to be negotiated by the two countries taking into account both Indian needs and US concerns.

#### **4.2 Anti-Terrorism Technologies**

Terrorism will continue to be a problem in the international arena for sometime – maybe even for a long time. Appropriate technologies need to be developed for fighting international terrorism. India and the US can jointly and selectively work on the development of appropriate anti-terrorism technologies. India has been combating terrorism for more than a decade and the two countries should begin identifying areas of technology cooperation. Recently, the US Government requested proposals for development of appropriate technologies to combat terrorism, in all for nearly 40 end uses.<sup>35</sup> This is in addition to technologies which India may require from USA and which are currently controlled for Anti Terrorism reasons.

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<sup>35</sup> USD(AT&L)/TSWG 02-Q-4655 BAA Packahge: Under Secretary of Defense for Acquisition, Technology and Logistics (USD (AT&L)) AND Combating Terrorism Technology Support Office Technical Support Working Group (TSWG). Broad Agency Announcement, 02-Q-4655. 23 October 2001.

### **4.3 Defence Technology Cooperation**

There already exists a mechanism for defence technology cooperation. With the removal of sanctions it should be possible to develop some joint defence technology programmes. India should consider the signing of a General Security of Information Agreement with the USA for this purpose. Such an agreement between the two countries will ensure confidentiality of information and data that may be exchanged between the two countries. However, GoI will need to study the clauses of such an agreement in detail.

### **4.4 Multilateral Technology Regimes**

Although the US is currently preoccupied with the September terrorism and its aftermath, non-proliferation will continue to remain high on the US agenda, probably even more so in view of the worries about terrorists getting their hands on WMD. As discussed earlier, of the four Technology control regimes only the NSG and the MTCR have had any effect on India's programmes. An export control system is already in place in India; and it is not out of line with the controls imposed by these regimes. There are thus a number options that need to be examined in this context.

#### **i) NSG**

It would appear that there might be some options with respect to India joining the NSG. One approach has been outlined in

a separate note.<sup>36</sup> In addition India could consider the merits and drawbacks of becoming an observer at NSG meetings. The NSG (for which a provision exists). This would give an opportunity to both India and the NSG members to interact without any firm commitment from either side. This may have some merit. Since the US is currently the Chairman of the NSG and India can discuss this with US both in a bilateral and a multilateral context.

ii) MTCR

Cooperation in space technologies for India's peaceful space programmes has been often identified as one of the potential areas of technological cooperation. However, US laws and export regulations act as a brake to progress in this area. This has adverse effects in two ways. First, it prevents direct US cooperation with India on space technology. Second, it prevents others from cooperating with India on space technologies because of the fear of inviting sanction from US under its own laws.<sup>37</sup>

One way this problem could be addressed is by India being considered as an adherent to MTCR. Under US laws, transfers from third parties to a country that is an MTCR adherent do not invite sanctions.<sup>38</sup> And according to Sec. 74 (a) (3) AECA,

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<sup>36</sup>G.Balachandran, *India and the Global System of Nuclear Non-Proliferation Initiatives*, unpublished September 2001, Annexure IV.1

<sup>37</sup>Sec. 73 (a) of the Arms Export Control Act (P.L. 60-629)

<sup>38</sup>Sec. 73 (b) of the Arms Export Control Act, "Inapplicability (of sanctions) with respect to MTCR adherents."

“the term ‘MTCR adherent’ means a country that participates in the MTCR or that, pursuant to an international understanding to which the United States is a party, controls MTCR technology and equipment in accordance with the criteria and standards set forth in the MTCR;” further, according to Sec. 74 (b) of the AECA, “For the purposes of subsection (a)(3), as it relates to any international understanding concluded with the United States after January 1, 2000, the term ‘international understanding’ means

(1) any specific agreement by a country not to export, transfer or otherwise engage in the trade of any MTCR equipment or technology that contributes to the acquisition, design, development, or production of missiles in a country that is not an MTCR adherent and would be, if it were of United States-origin, equipment or technology, subject to the jurisdiction of the United States under this Act; . . .”

This involves only a bilateral agreement with the US. In the light of the Side Letters that have already been given by the Government of India and the export control laws that have been passed by India in respect of sensitive technologies, it may be possible for India and the US to conclude such an “international understanding” without too much difficulty. This needs to be explored further.

## **Conclusion**

The above discussion points to some of the options that are available for consideration to both the countries, India and the United States, as they explore ways of improving bilateral technology relations.

**Annexure I**  
**Control of US Exports**

The US government has had a system to control exports through much of their history. In modern times, this aspect of export controls took a new meaning and role with the onset of the cold war in the late 40s. The US relied principally on two legislative acts to enforce such export controls: The Export Administration Act (EAA) of 1979 for the control of exports of dual-use goods and technologies, and the Arms Export Control Act (AECA) for the export of defence articles and defence services.

The Export Administration Regulation (EAR), administered by the Bureau of Export Administration (BXA) of the US Department of Commerce, implements the provisions of the EAA. BXA also maintains a list, as required under the EAA, consisting of the goods and technologies subject to export controls under EAA. This list is known as the Commodity Control List (CCL).

The International Traffic in Arms Regulations (ITAR), administered by the Department of State, implements the provisions of the AECA. The Office of Defence Trade Controls in the Department of State maintains a list of items designated by the President as defence articles and services for the purposes of the implementation of the AECA. This list is

commonly referred to as the United States Munitions List (USML).

The EAA expired in August 1994. Since then the control of exports of dual-use items has been carried out through a combination of emergency statutory authority – the International Emergency Economic Powers Act (IEEPA), executive orders and regulations. The latest such Executive Order was issued by President Bush on August 17, 2001 extending the provisions of the Export Administration Act of 1979 from August 2001.

An Export Control Classification Number (ECCN) – each number being a set of digits and a letter, identifies items listed in the CCL. The reasons for control of these items – identified by a digit – are the following:

- 0: National Security reasons (including Dual Use and International Munitions List) and items on the NSG Dual Use Annex and Trigger List;
- 1: Missile Technology reasons;
- 2: Nuclear Nonproliferation reasons;
- 3: Chemical and Biological Weapons reasons; and
- 9: Anti-terrorism, Crime Control, Regional Stability, Short Supply, UN sanctions etc.

Since reasons for control are not mutually exclusive, items may be controlled for more than one reason i.e. for example



for both national security reasons as well as nuclear nonproliferation reasons.

The number of items in the CCL and the reasons for their control vary over time depending on reviews carried out by the BXA in consultation with other agencies of the government.

The reach of the EAR is broad. Except for a few limited items, listed separately below, these include:

- 1) All items in the United States, including in the US Foreign Trade Zones or moving in transit through the United States from one country to another;
- 2) All US origin items wherever located;
- 3) US origin parts, components, materials or other commodities incorporated abroad into foreign made products, US origin software, and US origin technology commingled with foreign technology in quantities exceeding *de minimis* levels; and
- 4) Certain foreign-made direct products of US origin, technology or software.

The exceptions are:

- 1) Items that are exclusively controlled for export by other agencies of the US Government such as:
  - a) Department of State for items in the USML;

- b) Office of Foreign Assets Control (OFAC) of the Department of Treasury which implements broad controls and embargo transactions with certain foreign countries;
  - c) US Nuclear Regulatory Commission which controls export and re-export of commodities related to nuclear reactor vessels;
  - d) Department of Energy for the export and re-export of technology related to production of special nuclear materials;
  - e) Patent and Trademarks Office for export of technologies; in the form of patent application, amendment, modification or supplement, that are subject to the EAR; and
- 2) Certain publicly available technology or software that is already published, results of fundamental research, educational materials and phonographs, printed books, newspapers, periodicals etc.

Items subject to EAR but not listed under a separate ECCN in the CCL are given the classification EAR99. Such items, even though subject to export controls, do not in practice require licenses unless specially notified. These are usually common low technology items that do not warrant any special control efforts.

The CCL, in addition to listing of items, also includes for each item, along with its ECCN, the reasons for its control and the license requirements and exceptions. It is the responsibility of each exporter to verify whether or not an export requires a license and act accordingly. The EAR is a voluminous document, which sets out in detail the procedures to be followed by an exporter in executing an export order.

The ITAR is similar to the EAR but with its application restricted to items on the USML. Otherwise the procedures and practices in exporting an item are more or less identical.

**. Annexure II.1**

Imposition of sanctions on India, May 1998,

[Federal Register: May 20, 1998 (Volume 63, Number 97)]

[Presidential Documents]

[Page 27665]

From the Federal Register Online via GPO Access

[[wais.access.gpo.gov](http://wais.access.gpo.gov)]

[DOCID:fr20my98-123]

Presidential Documents

[[Page 27665]]

Presidential Determination No. 98-22 of May 13, 1998

Sanctions Against India for Detonation of a  
Nuclear Explosive Device

Memorandum for the Secretary of State

In accordance with section 102(b)(1) of the Arms Export Control Act, I hereby determine that India, a non-nuclear-weapon state, detonated a nuclear explosive device on May 11, 1998. The relevant agencies and instrumentalities of the United States Government are hereby directed to take the

*G. Balachandran*

necessary actions to impose the sanctions described in section 102(b)(2) of that Act.

You are hereby authorized and directed to transmit this determination to the appropriate committees of the Congress and to arrange for its publication in the Federal Register.

(Presidential Sig.)<Clinton1><Clinton2>

THE WHITE HOUSE,  
Washington, May 13, 1998.

[FR Doc. 98-13601  
Filed 5-19-98; 8:45 am]  
Billing code 4710-10-M

**Annexure II.2**

**Sec. 102 Arms Export Control Act (P.L. 90– 629)<sup>39</sup>**

(b) PROHIBITIONS ON ASSISTANCE TO COUNTRIES INVOLVED IN TRANSFER OR USE OF NUCLEAR EXPLOSIVE DEVICES; EXCEPTIONS;

PROCEDURES APPLICABLE. – (1) Except as provided in paragraphs (4), (5), and (6), in the event that the President determines that any country, after the effective date of part B of the Nuclear Proliferation Prevention Act of 1994 –

(A) transfers to a non-nuclear-weapon state a nuclear explosive device,

(B) is a non-nuclear-weapon state and either –

(i) receives a nuclear explosive device, or

(ii) detonates a nuclear explosive device,

(C) transfers to a non-nuclear-weapon state any design information or component that is determined by the President to be important to, and known by the transferring country to

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<sup>39</sup> 22 USC. 2799aa–1. Popularly referred to as the Glenn amendment. Similar language was originally enacted as sec. 670 of the Foreign Assistance Act of 1961, and codified at 22 USC. 2429a, by Sec. 12 of Public Law 95–92 (91 Stat. 620); amended and restated by sec. 737(c) of the International Security and Development Cooperation Act of 1981 (Public Law 97–113; 95 Stat. 1562); and further amended by sec. 1204 of the International Security and Development Cooperation Act of 1985 (Public Law 99–83; 99 Stat. 277). Sec. 670 (and sec. 669) were repealed by sec. 826(b) of the Nuclear Proliferation Prevention Act of 1994 (title VIII of the Foreign Relations Authorization Act; Public Law 103–236; 108 Stat. 519), after section 826(a) of that Act enacted two new sections into the Arms Export Control Act (secs. 101 and 102; at 22 USC. 2799aa and 2799aa–1) to state nuclear nonproliferation controls.

be intended by the recipient state for use in the development or manufacture of any nuclear explosive device, or  
(D) is a non-nuclear-weapon state and seeks and receives any design information or component which is determined by the President to be important to, and intended by the recipient state for use in, the development or manufacture of any nuclear explosive device, then the President shall forthwith report in writing his determination to the Congress and shall forthwith impose the sanctions described in paragraph (2) against that country.

(2) The sanctions referred to in paragraph (1) are as follows:

(A) The United States Government shall terminate assistance to that country under the Foreign Assistance Act of 1961, except for humanitarian assistance or food or other agricultural commodities.

(B) The United States Government shall terminate—

(i) sales to that country under this Act of any defense articles, defense services, or design and construction services, and

(ii) licenses for the export to that country of any item on the United States Munitions List.

(C) The United States Government shall terminate all foreign military financing for that country under this Act.

(D) The United States Government shall deny to that country any credit, credit guarantees, or other financial assistance by any department, agency, or instrumentality of the United States

Government, except that the sanction of this subparagraph shall not apply –

- (i) to any transaction subject to the reporting requirements of title V of the National Security Act of 1947 (relating to congressional oversight of intelligence activities),
- (ii) to medicines, medical equipment, and humanitarian assistance, or
- (iii) to any credit, credit guarantee, or financial assistance provided by the Department of Agriculture to support the purchase of food or other agricultural commodity.

(E) The United States Government shall oppose, in accordance with section 701 of the International Financial Institutions Act (22 USC. 262d), the extension of any loan or financial or technical assistance to that country by any international financial institution.

(F) The United States Government shall prohibit any United States bank from making any loan or providing any credit to the government of that country, except for loans or credits for the purpose of purchasing food or other agricultural commodities, which includes fertilizer.

(G) The authorities of section 6 of the Export Administration Act of 1979 shall be used to prohibit exports to that country of specific goods and technology (excluding food and other agricultural commodities), except that such prohibition shall not apply to any transaction subject to the reporting requirements of title V of the National Security Act of 1947 (relating to congressional oversight of intelligence activities).



**Annexure II.3**

Title IX of the Department of Defense Appropriations Act, 2000 (Public Law 106–79; 113 Stat. 1283) repealed the India-Pakistan Relief Act, effective October 21, 1999. In its place, title IX of that Act provided the following:

**“TITLE IX**

**“WAIVER OF CERTAIN SANCTIONS AGAINST INDIA AND PAKISTAN**

**“SEC. 9001. (a) WAIVER AUTHORITY** – Except as provided in subsections (b) and (c) of this section, the President may waive, with respect to India and Pakistan, the application of any sanction contained in section 101 or 102 of the Arms Export Control Act (22 USC. 2799aa or 22 USC. 2799aa–1), section 2(b)(4) of the Export Import Bank Act of 1945 (12 USC. 635(b)(4)), or section 620E(e) of the Foreign Assistance Act of 1961, as amended, (22 USC. 2375(e)).

**“(b) EXCEPTION** – The authority to waive the application of a sanction or prohibition (or portion thereof) under subsection (a) shall not apply with respect to a sanction or prohibition contained in subparagraph (B), (C), or (G) of section 102(b)(2) of the Arms Export Control Act, unless the President determines, and so certifies to the Congress, that the application of the restriction would not be in the national security interests of the United States.

**“(c) TERMINATION OF WAIVER** – The President may not exercise the authority of subsection (a), and any waiver

previously issued under subsection (a) shall cease to apply, with respect to India or Pakistan, if that country detonates a nuclear explosive device after the date of the enactment of this Act or otherwise takes such action which would cause the President to report pursuant to section 102(b)(1) of the Arms Export Control Act.

“(d) TARGETED SANCTIONS –

“(1) SENSE OF THE CONGRESS –

“(A) it is the sense of the Congress that the broad application of export controls to nearly 300 Indian and Pakistani entities is inconsistent with the specific national security interests of the United States and that this control list requires refinement; and

“(B) export controls should be applied only to those Indian and Pakistani entities that make direct and material contributions to weapons of mass destruction and missile programs and only to those items that can contribute to such programmes.

“(2) REPORTING REQUIREMENT – Not later than 60 days after the date of the enactment of this Act, the President shall submit both a classified and unclassified report to the appropriate congressional committees listing those Indian and Pakistani entities whose activities contribute to missile programmes or weapons of mass destruction programmes.

“(e) CONGRESSIONAL NOTIFICATION – The issuance of a license for export of a defense article, defense service, or technology under the authority of this section shall be subject

to the same requirements as are applicable to the export of items described in section 36(c) of the Arms Export Control Act (22 USC. 2776(c)), including the transmittal of information and the application of congressional review procedures.

“(f) REPEAL – The India-Pakistan Relief Act (title IX of the Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 1999, as contained in section 101(a) of Public Law 105–277) is repealed effective October 21, 1999.”

**Annexure III**  
**Multilateral Export Control Regimes**

<b>WASSENAAR</b>	<b>AG</b>	<b>MTCR</b>	<b>NSG</b>
<b>Argentina</b>	<b>Argentina</b>	<b>Argentina</b>	<b>Argentina</b>
<b>Australia</b>	<b>Australia</b>	<b>Australia</b>	<b>Australia</b>
<b>Austria</b>	<b>Austria</b>	<b>Austria</b>	<b>Austria</b>
<b>Belgium</b>	<b>Belgium</b>	<b>Belgium</b>	<b>Belgium</b>
...	...	...	<b>Belarus</b>
...	...	<b>Brazil</b>	<b>Brazil</b>
<b>Bulgaria</b>	...	...	<b>Bulgaria</b>
<b>Canada</b>	<b>Canada</b>	<b>Canada</b>	<b>Canada</b>
<b>Czech Republic</b>	<b>Czech Republic</b>	<b>Czech Republic</b>	<b>Czech Republic</b>
	<b>Cyprus</b>		<b>Cyprus</b>
<b>Denmark</b>	<b>Denmark</b>	<b>Denmark</b>	<b>Denmark</b>
...	<b>European Union</b> (Observer)	...	<b>European Union</b> (Observer)
<b>Finland</b>	<b>Finland</b>	<b>Finland</b>	<b>Finland</b>
<b>France</b>	<b>France</b>	<b>France</b>	<b>France</b>
<b>Germany</b>	<b>Germany</b>	<b>Germany</b>	<b>Germany</b>
<b>Greece</b>	<b>Greece</b>	<b>Greece</b>	<b>Greece</b>
<b>Hungary</b>	<b>Hungary</b>	<b>Hungary</b>	<b>Hungary</b>
	<b>Iceland</b>	<b>Iceland</b>	...
<b>Ireland</b>	<b>Ireland</b>	<b>Ireland</b>	<b>Ireland</b>
<b>Italy</b>	<b>Italy</b>	<b>Italy</b>	<b>Italy</b>
<b>Japan</b>	<b>Japan</b>	<b>Japan</b>	<b>Japan</b>
...	...	...	<b>Latvia</b>

WASSENAAR	AG	MTCR	NSG
Luxembourg	Luxembourg	Luxembourg	Luxembourg
Netherlands	Netherlands	Netherlands	Netherlands
New Zealand	New Zealand	New Zealand	New Zealand
Norway	Norway	Norway	Norway
Poland	Poland	Poland	Poland
Portugal	Portugal	Portugal	Portugal
Romania	Romania	...	Romania
Russia	...	Russia	Russia
Slovakia	Slovakia	...	Slovakia
...	...	...	Slovenia
...	...	South Africa	South Africa
South Korea	South Korea	...	South Korea
Spain	Spain	Spain	Spain
Sweden	Sweden	Sweden	Sweden
Switzerland	Switzerland	Switzerland	Switzerland
Turkey	Turkey	Turkey	Turkey
Ukraine	...	Ukraine	Ukraine
United Kingdom	United Kingdom	United Kingdom	United Kingdom
United States	United States	United States	United States

### Abbreviations:

AG: Australia Group

MTCR: Missile Technology Control Regime

NSG: Nuclear Suppliers Group

**Annexure IV**

**India and the global system of nuclear  
non-proliferation initiatives**

The Nuclear Suppliers Group (NSG) and the NPT Exporters Committee (Zangger Committee) are the two principal multilateral arrangements that control nuclear exports. With the exception of a few countries, these two arrangements contain within them almost all the countries that have an established nuclear industry. The three main outsiders are India, Israel and Pakistan.

The exclusion of India from these two arrangements has had some effect on the Indian civilian nuclear industry, especially with respect to nuclear power. India's ever-growing demand for power makes it imperative that it consider nuclear power as a serious option to satisfy its power needs. India and China will account for the major portion of addition to the global nuclear power industry in the coming years.

For the past 25 years or more, India's nuclear power industry has relied almost exclusively on indigenous development to satisfy its needs. While India's exclusion from the two multilateral regimes will not stop its nuclear industry from growing, it will almost certainly slow it.

This brief note explores options through which the international community and India can come to terms with each other without sacrificing their principal needs. That of the international community is to halt the proliferation of nuclear weapons and their technologies without impeding trade, and that of India to join the international community in non-proliferation efforts without sacrificing its national security need for maintaining a minimum nuclear deterrent capability.

It is very unlikely that India will be able to join the Zangger Committee, because of its inability to join the NPT: membership in the NPT is a prerequisite for membership to the Zangger Committee.

Why can India not join the NPT? India has nuclear weapons and means to retain them as part of its strategic requirements. NPT formally has only two types of member states: nuclear weapon states and non-nuclear weapon states. They have been defined strictly in the treaty itself. India does not qualify as a nuclear weapon state. The treaty has to be amended if India is to be included as a nuclear weapon state. Amendment would require the approval of (a) a majority of all the Parties to the treaty, growing to 187 by early 2000; (b) all the NPT-defined nuclear weapon states; and (c) all the NPT members who are on the Board of Governors of IAEA. Amendment to the treaty, therefore, is a formidable task. On the other hand there is no scope for India to join the NPT as a non-nuclear weapon state.

Therefore, India's membership in the Zangger Committee is extremely unlikely.

What about the Nuclear Suppliers Group? Ironically it may be easier for India to join the NSG, an arrangement that was born as a reaction against the India nuclear tests of 1974. The reason is that there are a number of crucial differences between the Zangger and NSG guidelines.

First, the NSG does not define its membership in the same way as NPT does. As far as membership goes there is no distinction between nuclear and non-nuclear weapon states. The distinction between the two arises only in respect of the conditions under which nuclear trade may take place.

Second, unlike the NPT, and hence the Zangger Committee, the NSG does not have a *formal* definition of a nuclear-weapon state although the term non-nuclear-weapon state is frequently used in its documents. Of the various members of the NSG only the United States has formally, as a part of its legislative requirements, adopted the NPT definition of a nuclear weapon State. According to NSG principles, its members are free to interpret the NSG guidelines in line with their domestic legislative requirements, so long as they do not conflict with NSG guidelines.



Third, the NPT requires non-nuclear weapon states not to acquire nuclear explosive devices. Such states have to forsake manufacture or possession of nuclear explosive devices as a *binding international commitment*. The NSG does not make any such binding demands on the non-nuclear weapon states that engage in nuclear trade.

Coming now to the case of India, it can be argued that India can agree to NSG membership without sacrificing any of its national security requirements, and at the same time, NSG can accommodate Indian membership without sacrificing any of the non-proliferation goals of the NSG. Indeed Indian membership in NSG will enhance the effectiveness of nuclear and dual-use technology controls globally as India is possibly the only country outside NPT with full nuclear-fuel cycle activities that are not part of any international control regime.

Let us first start from the NSG perspective. NSG Guidelines contain two parts. Part I for nuclear transfers and Part II for transfers of nuclear-related dual-use equipment, materials, software and related technology.

### **NSG Part I**

The fundamental principle for Part I transfer is (Art. 2):

“Suppliers should authorize transfer of items or related technology identified in the trigger list only upon formal

governmental assurances from recipients explicitly excluding uses which would result in any nuclear explosive device.”

In addition the guidelines suggest that:

“Suppliers should authorize transfer of items or related technology identified in the trigger list only when they are satisfied that the transfers would not contribute to the proliferation of nuclear weapons or other explosive activities.” (Art. 11)

To achieve these objectives it is required that

“Suppliers should transfer trigger list items or related technology to a non-nuclear weapon State only when the receiving State has brought into force an agreement with the IAEA requiring the application of safeguards on all source and special fissionable material in its current and future peaceful activities.” (Art. 4(a))

This is supplemented by the suggestion that

“Suppliers reserve the right to apply additional conditions of supply as a matter of national policy.” (Art 4(e))

## **NSG Part II**

The objective of Part II is to avert the proliferation of nuclear weapons by controlling the “transfer of certain equipment, materials, software and related technology that could make a

*major* contribution to a “nuclear explosive activity” or an “Unsafeguarded nuclear fuel-cycle activity.” To that end the Guidelines require that

“Suppliers should not authorize transfers of equipment, materials, software or related technology identified in the Annex:

- for use in a non-nuclear-weapon state in a nuclear explosive activity or an unsafeguarded nuclear fuel cycle facility, or
- in general, when there is an unacceptable risk of diversion to such an activity, or when the transfers are contrary to the objective of averting the proliferation of nuclear weapons.”  
(Art 2 of NSG Guidelines Part II)

The Guidelines also suggest that

“In the process of determining that the transfer will not pose any unacceptable risk of diversion, in accordance with the basic principle and to meet the objectives of the Guidelines, the supplier should obtain, before authorizing the transfer and in a manner consistent with its national laws and practices, the following:

- (a) a statement from the end-user specifying the uses and end-use locations of the proposed transfer; and
- (b) an assurance explicitly stating that the proposed transfer or any replica thereof will not be used in any nuclear explosive activity or unsafeguarded nuclear fuel-cycle activity.” (Art V)

There are a number of ways in which India can be integrated into the global non-proliferation control arrangements to the benefit of both India and the world community.

First, India could declare a list of 'peaceful' nuclear activities which it can offer to place under IAEA safeguards. Those facilities that are known and are not declared to be peaceful would be considered – or could be declared – to be 'military'.

What is the difference between this and the NPT requirement, in case of non-nuclear weapon States, that “safeguards required...shall be applied on all source and special fissionable material in all peaceful activities.”?

In the case of NPT, a non-nuclear weapon State has to give an undertaking that it will neither manufacture nor otherwise acquire a nuclear explosive device. Therefore the only non-peaceful nuclear activity involving fissionable material that is permitted to be outside safeguards is nuclear submarine activities. Therefore, a non-nuclear weapon State party to NPT cannot declare any activity other than nuclear submarine activities to be non-peaceful. The NSG, on the other hand, does not require any commitment from any member to forsake nuclear weapons. Therefore, it should be permissible for a state not party to NPT to declare, under NSG Guidelines, part of its nuclear-fuel cycle activities as peaceful and others as military without breaching any international commitment. The NSG

members for their part can “apply additional conditions of supply as a matter of national policy” to ensure that the supplies made do not in any manner contribute to proliferation of nuclear weapons.

India should not have any difficulty in accepting additional conditions to ensure that such transfers do not contribute to the Indian nuclear weapons programme. As a matter of fact, India had given such a nuclear side letter, as an addition to the 1984 Indo-US MOU on technology transfer, to ensure transparency and to assure the US of its intention not to use any such transfer in any manner inconsistent with the supplier’s (in this the case the USA) domestic laws and non-proliferation principles.

Such an arrangement would be a compromise between the positions of those NSG members who are non-proliferation fundamentalists and that of India which is now a nuclear weapon state and may like to be recognized formally as such. By allowing transfers to India, after it has made a distinction between ‘peaceful’ and ‘non-peaceful’ activities within its territory but accepted IAEA safeguards on all ‘peaceful’ activities as a voluntary gesture, the non-proliferation fundamentalists would have the satisfaction of not bestowing on India any formal recognition as a nuclear-weapon state and at the same time have the satisfaction of bringing under control a substantial portion of today’s global production of

unsafeguarded fissile material. India, for its part, would have the benefit of nuclear transfers for peaceful purposes without having to place all of its nuclear activities under IAEA safeguards and also getting recognition of its military nuclear activities.

Alternately, some members of the NSG can recognize that India is no more a non-nuclear weapon state – within the terms of their domestic legislation if any – without contravening their NSG commitment since NSG has not formally adopted the NPT definition of a nuclear-weapon state. In that case provisions of Art 4 of NSG Guidelines Part I would not apply and the voluntary placing of its peaceful nuclear activities under IAEA safeguards by India could be construed as a positive contribution to nuclear non-proliferation as nuclear transfers for peaceful purposes will not contribute to proliferation of nuclear weapons thus satisfying the requirements of the “Non-proliferation Principle” of Art.11.

**NOTE:**

It would be worthwhile to study the implications of the MOU that was reached at the time of the formulation of NSG Guidelines Part 2. This MOU uses the term “Subscribing Governments”, which is not used in the Guidelines themselves. An analysis of NSG publications would suggest that the following is representative of the NSG arrangement:

A country can become an adherent to the NSG Guidelines by informing the Director General of the IAEA of its intention to abide by either the NSG Guidelines and asks that he inform the Agency members of this decision. Nothing further is required either of the state concerned or the NSG members. The status of an “adherent” is independent of the views of the members of NSG.

Till 1993, membership of the NSG was not a recognized concept. Till then all the adherents attended the NSG meetings. However since 1993 only the members are allowed to attend meetings. Membership now is a status that can be attained only by a consensus of the existing members of the arrangement.

The term “Subscribing Government” is unique to the Dual-Use arrangement. According to the MOU a Subscribing Government is one that

- (a) exchanged notes of acceptance of the MOU and both the Guidelines (Part 2) and the Annex on 3 April 1992; or
- (b) subsequently, upon the unanimous consent of all existing Subscribing Governments, becomes a Subscribing Government based on an exchange of notes of acceptance of this MOU and both the Guidelines and Annex with all existing Subscribing Governments.

Thus membership in the NSG seems to be a two-step process. A country becomes a Subscribing Government to the Dual-Use Arrangement. by a consensus decision to invite a country into the Dual-Use Arrangement and by an exchange of diplomatic notes with other Subscribing Governments. A country becomes a participant in the NSG Plenary by a consensus decision by all current NSG members.

Does this mean that India can become a Subscribing Government to the Dual-Use Arrangement first and then become a member of NSG? How difficult would it be to become a Subscribing Government? Are there any precedents to such a move? All these require some serious study.

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